## Exploring the Deep Blue Sea and Bringing Salmon Back Home: A Tale of Two Innovators

Totem Report February 8, 2017 By Jeanne McKnight

If Wednesday's meeting is any indication, innovation is most definitely alive and well in the Puget Sound region, with two relatively new companies shaking things up. In the case of one, offering new ways to explore the undersea world; and the other, new ways to help migrating fish get back to their ancestral spawning grounds.

**President Cathy** Gibson called the meeting to order, followed by **Roberta Greer**'s Inspiration for the Day: "Rotary accepts people of all faiths," she noted. **Don Murphy** led us in an a cappella version of the *National Anthem;* **Laurel James** introduced visiting Rotarians; **Brad Fowler** introduced guests. Following the announcements, President Cathy acknowledged those celebrating Milestone Anniversaries in February. **Kim Moore** then introduced our newest member, second-generation Rotarian, **Evan** 



**Steinruck**. Kim noted that Evan, whose Lake Stevens Rotarian dad was in attendance, attended his first Rotary meeting at age 7!



**President Cathy** then asked **Jim McCurdy** to take the stage to introduce our main program speaker, Stockton Rush, Co-founder and CEO of Ocean Gate, Inc. as well as the Ocean Gate Foundation, a STEM-based non-profit organization that Rush founded "because I want new generations to be inspired by the ocean the way I was inspired by space." (For this program, the main speaker was first and the short program speaker, second.)

As we learned from the introduction, Princeton-graduate Rush was the youngest jet transport rated pilot in the world when he obtained his DC-8 Type/Captain's rating at the United Airlines Jet Training Institute at the age of 19. In 1984, Rush joined the McDonnell Douglas Corporation as a Flight Test Engineer on the F-15 program and spent years in aviation before turning to the ocean.

In essence, all of his years in the sky couldn't quench Rush's thirst for ocean exploration, and in 2009, Rush co-founded Ocean Gate, Inc., an ocean exploration venture focused on using manned submersible solutions for subsea operations in the commercial (tourism, biopharma, marine-derived drugs, sub-sea mining, and oil and gas exploration) and military ventures. Areas of focus for commercial ventures include site survey and inspection, R&D, film and media production, and deep sea testing.

Currently, as Rush pointed out, sub-sea work is done via expensive and complicated systems, primarily Remotely Operated Vehicles (ROVs) or Autonomous Underwater Vehicles (AUVs). ROVs are typically tethered to a ship by miles-long, thick cables and they are clumsy and difficult to maneuver, Rush pointed out, while the newer AUVs are still being developed, with fewer than a dozen worldwide capable of going to extreme depths (4,000+ meters).



In contrast, Ocean Gate has developed its own next generation manned submersible solutions: *Antipodes, Cyclops 1*, and *Cyclops 2* (under development). Known as launch and recovery systems (LARS), these submersibles can be used in both shallow and deepwater missions, Rush pointed out. Countering the myth that manned subs are either dangerous (there have been no major injuries in 35 years in classed manned subs carrying well over 15 million passengers); or expensive (undersea tourists can pay as much as \$100,000 for the journey; and because ships are the most expensive and limiting item and are "always in the wrong ocean"), Rush offered a glimpse into what drives him to continue working in this field: "Once you're in a sub," he said, "it's an emotional experience that will change your life."



After a brief question and answer period, it was time for the short program. **President Cathy** called this reporter to the stage to introduce Whooshh Innovations' CEO and Co-founder, Vince Bryan III. Bryan co-founded Whooshh in 2007 to find a better way to move fish over and around obstacles such as irrigation and hydroelectric dams, through processing plants, and—in an aquaculture setting—from pen to pen.

"In many ways, it is remarkable that we are here today, much less racing toward installation of a system that can transport fish in seconds over even the largest dams in the world," Bryan said, adding that "Some of you may have heard about us when late night comedy host, <u>John Oliver</u> remarked that, after seeing the video about the so-called 'Salmon Cannon,' noted that "when you see a world torn apart and at war, I want you to remember that video and think, we can do great things. We can do great things."

Bryan then took us on the journey of a small "fry" – out to sea and back to the river of its origin. He gave two scenarios: The first, the typical energy-expending journey of the fish that has to return home by heading up a typical fish ladder, exhausted and often infertile because of the

difficult journey. The second version is the story of a fish returning home to find the Whooshh system waiting to "whooshh" the fish up and over the dam, where it arrives upriver to safely spawn.

Bryan reported that the Whooshh system (aka "Salmon Cannon") is in use in many places, and is being considered to provide fish passage over the Cle Elum Dam—a U.S. Bureau of Reclamation project. He showed a <u>short video</u> and discussed many of the tests being done to show the safety of the Whooshh system on the fish.

Bryan's main point: Fish moved via the Whooshh tube make it back upstream faster than the fish that did not go through the Whooshh system.

The meeting, focusing on the tale of two innovators, adjourned promptly at 1:30 p.m.